

# A Prospective for Health Manpower Planning

DANIEL J. SCHNEIDER, M.D., M.P.H., And ROBERT BILGRAD, M.A.

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*Dr. Schneider is associate professor of community health, School of Public Health, University of Texas at Houston. Mr. Bilgrad is research associate at the university. Hugh E. Davis assisted in constructing the systems model. Tearsheet requests to Daniel J. Schneider, M.D., P.O. Box 20186 Astrodome Station, Houston, Tex. 77025.*

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That a shortage of health manpower exists in the United States is widely known. Many studies, commissions, and conferences have touched on this problem.

Whether the manpower shortage is simply one of the many ailments faced by the structure of American medical care institutions or whether it is the determinant that prevents the structure from functioning properly needs to be defined. In other words, will medical care be provided in an acceptable, efficient, and effective manner once the manpower shortage has been remedied?

Much concern exists over the deficiencies surrounding medical care in the United States, but what the major problems actually are is uncertain. Should the blame be placed on the shortage of physicians and paramedical and ancillary personnel, or should

it be placed on inefficient organization of the medical care system? Perhaps uneven geographic distribution of personnel and facilities is the problem. Should concern be concentrated on the general deficiency and poor distribution of medical care, or should efforts be directed toward stemming the rapid rise in the cost of medical care?

The situation may indeed be the result of an interrelationship of some or all of these and other problems as well. Nevertheless, there is widespread belief that the simple cure is to increase the number of physicians, physician's assistants, and other health personnel.

Proposals for better medical services usually have as their primary objective the efficient use of medical personnel, institutions, financial resources, and other resources. This is a limited objective because more than just the machinery of a program must be analyzed. The effectiveness of a program actually cannot be evaluated on the basis of how many more hospital beds will be made available or whether the desired number of physicians along with paramedical and ancillary personnel will be obtained.

Rutstein (1) states: "In the final analysis, the effectiveness of a health program must be measured by a decrease in disease, disability, or untimely death, or the program is of no practical use." Fein (2) adds: "It should be remembered . . . that a patient's health is not improved by manpower itself, but by the services it may provide."

Consequently, it is essential that the manpower shortage be put into its proper perspective. Is the so-called crisis in medical care solely reflected by the short-

age of manpower? Perhaps it cannot be so neatly pinpointed and consists of a broader array of problems.

Whatever the answer may be, it is crucially important that the study of health manpower be approached in a comprehensive manner so that one does not lose sight of the vast array of influencing factors while seeking to define the requirements for human resources. We emphasize the importance of adopting an outcome orientation when attempting to set forth viable plans for the development of health manpower. We also emphasize a logical perspective from which to view and analyze problems in health manpower and the process of developing manpower as an integral part of health services planning. In addition, we present a comprehensive health manpower studies model.

### **Approaches to Planning**

In planning for health manpower, personnel and institutional factors such as organization, distribution, mobility, role relationships, functional use patterns, economics, licensure and certification practices, new health careers, recruitment and training practices, and politicosocial influences must be considered. These factors comprise the complex array of constraints affecting the efficient and effective use of human resources that contribute to the outcomes of a health services system.

Basically, there are two approaches to manpower planning: input and outcome. Input is preoccupied with defining the characteristics of occupational categories. Outcome is concerned with defining the human resources required to deliver health services.

*Input-oriented approach.* The traditional approach to prescribing health manpower needs has been one of more or less rigidly defining and carefully duplicating professional types as inputs to health service institutions. This approach is geared to a professional manpower availability base, and the existing health manpower matrix is viewed as being functional, appropriate, and sacred.

With the nation's great achievements in the art of medicine, the quantity and quality of health services supplied would be considered by the traditional approach to be directly related to the quantity of existing types of health manpower supplied with disregard for, or little importance attributed to, a variety of other influencing factors.

When proposing remedies for deficiencies in the delivery of health services, the solution would be simply and constantly to increase the total supply of existing types of health manpower and perhaps to balance its distribution. With this approach it is assumed that only in this way can the ever-increasing demands for health services adequately be met. For example, one projection of future health manpower requirements (3) indicates that by 1975 another 1.2 million health personnel in addition to the 2.8 million active workers in 1966 will be needed—all of the same types as were commonly available in 1966.

Increases in population, improved living standards, Medicare, better education, greater emphasis on the nation's unsatisfied health needs, and heightened expectancies for the availability, quality, and outcome of health services have all contributed to-

ward excessive demands on the health care industry. These factors have spotlighted the deficient delivery of health services in our nation and, because of the subsequent increased demands, have also resulted in rapidly rising costs. The situation has prompted widespread attention to and concern for the problems facing the health care industry—to the point that the word “crisis” has become common.

Consequently, the health manpower shortage is no longer viewed as the primary cause of the health care industry's difficulties. Manpower is now viewed as a mere symptom of the plight of American medicine. Attention has been turned, in part, to the organizing and financing of health services.

Many authors now take a somewhat different approach to the study of health manpower. They realize that an attempt simply to increase the production of existing types of health manpower will not by itself overcome the present and projected manpower shortages, nor will it remedy or even relieve the so-called crisis in health care. Instead, they now stress the need for new organizations like the health maintenance organizations, or HMO's. By delegating tasks to paramedical personnel, such as to physician's assistants, existing as well as new types of manpower will be more efficiently used; thereby the productivity of the health manpower team will be increased.

When looking at the health manpower matrix, such authors also stress the importance of developing “career ladders.” Thus persons can advance on the basis of education, training, and proficiency rather than drift into

cul-de-sacs perpetuated by antiquated, ineffective licensure and certification requirements and traditional practices and biases.

Both of these approaches to the solution of health manpower shortages have an overriding common focus: they are input oriented. We classify them as such because they do not first define the outcomes desired of our health services system on the basis of population characteristics and service requirements.

*Outcome-oriented approach.* We feel that a more appropriate approach is first to define the desired outcomes of health services and then translate these outcomes into the functional criteria and organizational arrangements best able to deliver them. Only then can we define the manpower roles and skills needed for performing the tasks required for carrying out the service functions that can induce the desired outcomes through complex organizational management.

The four most important considerations for outcome-oriented planning of health manpower are, therefore, definition and interpretation of (a) population characteristics, (b) desired outcomes of health services, (c) functional performance criteria of the health services system, and (d) organizational arrangements against which manpower requirements as inputs to a health services system can be prescribed.

In the outcome-oriented approach to the study of health manpower, emphasis on a professional manpower availability base is secondary. Instead, study should be geared to a population base and should emphasize the population's changing health characteristics and needs. Trend analysis should be the basis for

defining the outcome objectives for health services and for choosing among alternative processes.

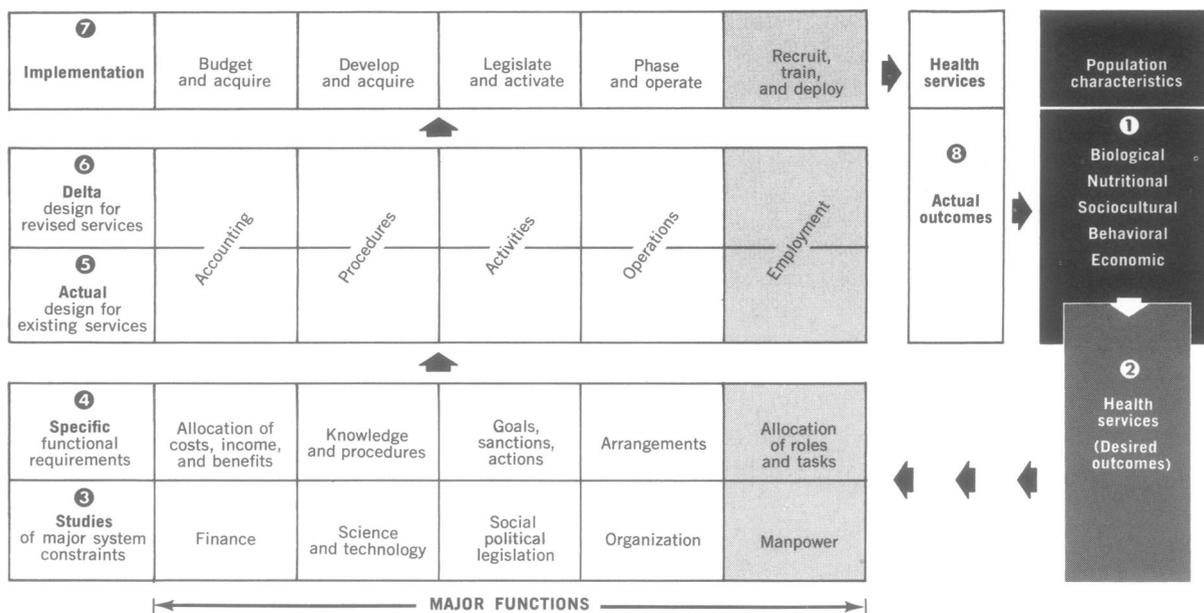
In choosing among these alternatives, it is essential that the nature of each one be weighed for its contribution toward end states of health through not only reduction of disease and rehabilitation of the person but also through increased emphasis on preventing disease and inducing states of health.

After selecting a process, it is necessary to identify the service functions, activities, special operations, programs, and so forth that when performed will accomplish the desired outcomes. The specifications for these functions we call functional performance criteria. Some considerations in selecting and specifying the criteria of functional performance for health service units are the criteria's relative contribution to the induction of states of health as compared with reduction of disease, the extent of use and benefits from using resources, and the cost-benefits of alternative systems. When selecting functional performance criteria, one must also consider the capability and feasibility of achieving the desired shifts in trends of outcomes.

Organizational arrangements—the next essential step in planning for manpower—translate performance criteria into the complex system of packages or units through which the selected interventions are implemented. Organizational arrangements must provide the means for integrating the service units of primary care with the educational institutions and the many community agencies that peripherally relate to the total health of the community.

Accomplishing such planning

**Figure 1. HEALTH SERVICE PLANNING MODEL**



NOTE: Shaded and black areas represent the major focus of this paper.

is not easy; it requires a commitment to planning by the community. Because we are concerned primarily with identifying the essential variables that must be accounted for in health manpower planning, we have not attempted to probe the more generic issues surrounding the actual planning process. But planning for health manpower cannot be done in a vacuum. It must be carried out within planning for health services so that it relates rationally to the functioning of those services.

**Services Planning Model**

Our model depicts a perspective for health manpower planning within the more general scope of planning for health services (fig. 1). We have attempted to structure the many factors that must be integrated in an outcome-oriented approach to manpower planning. The important features of this model follow:

1. Planning for the delivery of

health services should at all times begin with the definition of desired health outcomes which are derived from the needs of the population to be served.

2. Planning for manpower must be integrated with planning for such other major components of the health services system as organization, legislation, financing, and scientific and technological developments.

The population characteristics (fig. 1) include data on such phenomena as biological (physiological, degenerative, genetic, communicable), nutritional, socio-cultural, behavioral, and economic states of disease, health, and well-being. Planning must use epidemiologic, biostatistical, and sociometric methods in quantifying these components. Quantifying and assessing these components would be extremely complex. The following types of data would be required to determine desired outcomes for health services. This classification is not

intended to be all-inclusive.

**MAJOR INFORMATION CATEGORIES FOR HEALTH SERVICES PLANNING**

**BIOLOGICAL**

- Communicable and parasitic disease
- Chronic illness
- Medical and surgical conditions
- Dental disorders
- Maternal and child health
- Accidental injuries
- Occupational injuries
- Nutrition
- Health problems of the aging
- Mortality rates

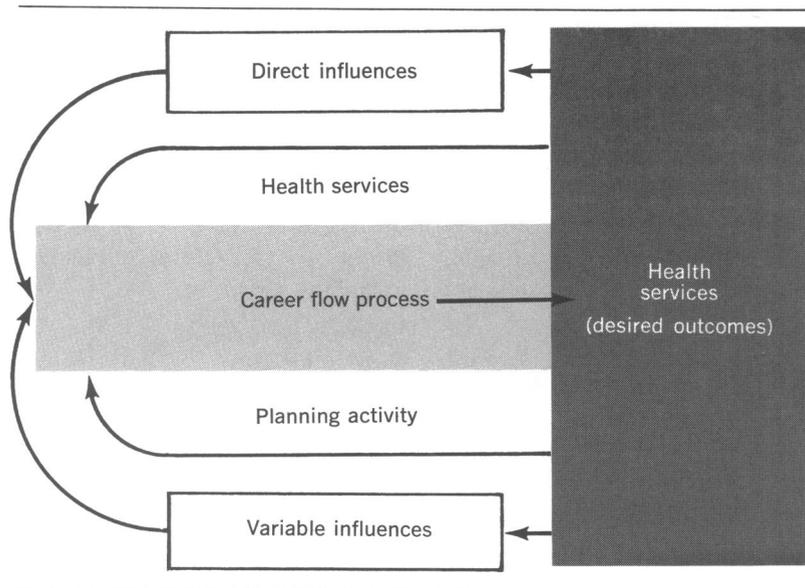
**SOCIAL AND CULTURAL**

- Age distribution
- Sex
- Population size
- Family size
- Family environment and attitudes
- Social and cultural facilities
- Religious convictions
- Dietary habits of various population groups

**BEHAVIORAL**

- Utilization patterns of health resources
- Consumer attitudes toward existing health resources

**Figure 2. HEALTH MANPOWER ACTIVITY COMPLEX**



Divorce rates  
Unwed mothers  
Personal attitudes toward health  
Mental disorders  
Communications media methods and usage  
Drug usage  
Violent acts and causative factors  
Nervousness, worry, and depression  
Desire or awareness of proper nutritional levels

**ECONOMIC**

Availability of health resources (physical facilities and manpower)  
Employment and occupational statistics  
Income statistics  
Housing data (quantity and quality)  
Personal health expenditures correlated with types of goods and services  
Health insurance coverage  
Frequencies and types of public health care assistance  
Transportation problems  
Ability to maintain proper levels of nutrition and health

**EDUCATIONAL**

Years of schooling  
Functional literacy  
Education systems and priorities  
Availability and accessibility of types of education  
Health education in schools  
Health education via other media

**ENVIRONMENTAL**

Water pollution  
Air pollution  
Food and drugs  
Housing  
Transportation  
Land use  
Liquid and solid wastes  
General sanitation  
Vector control  
Ionizing radiation

Skills in behavioral management, medicine, sociology, psychology, labor economics, personnel management, and education are required to translate these components into macro-social delivery systems.

We do not intend to discuss the full scope of our model. Instead, the remainder of the discussion focuses specifically on health manpower planning.

**Manpower Activity Complex**

Figure 2 is a flow diagram of the major components of the manpower concern portion of figure 1. The focal point of this diagram is the desired outcomes for health services. These desired outcomes are defined and re-

defined through the interaction of direct and variable influences in society. In turn, the development of the quantity, quality, and types of manpower necessary to perform the functions required to meet the desired outcomes for health services is also affected by these direct and variable influences.

We must not allow manpower development to be "haphazardly" affected by these influences nor to be rigid, unchanging, and unresponsive to changing influences. Instead, coordinated community planning and action must continually assess the desired outcomes of health services and then define and develop the appropriate quantities, qualities, and types of health manpower to effect these desired outcomes. A haphazard development of manpower, not based on a clear realization of the desired outcomes which are to be effected, is likely to create a deficient health manpower matrix that is incapable of meeting the total health needs of the community or, at best, treating selected needs well while grossly neglecting other needs.

**Manpower Flow Diagram**

A detailed refinement of figure 2 identifies a host of direct and variable influences that affect the health manpower development process (fig. 3). Again it must be emphasized that, in planning for health manpower, the focal point must always be the desired outcomes for health services and the functional requirements to meet community health needs.

The health manpower flow diagram (fig. 3) has three segments: direct influences, the career flow process, and variable influences. The components of

these segments are numbered and placed on the diagram with connecting lines that demonstrate the primary scope of their influence. A brief definition of the components of figure 3 follows.

**Career flow process.** Sequence 2 through 13 shows the primary path of development in a person's health career. Although each person who enters the health field moves through the career process from left to right, our flow process numbering system begins at the right, or outcome end, because the criteria of outcome for each component define, in turn, what the inputs to that component must be. Naturally, these inputs are the outputs of previous components. This approach more easily retains a logical process for defining inputs in terms of desired outcomes.

**Direct influences.** A host of forces shed their influence over the total development (or one

subpart) and use of human resources. These forces are responsible for setting and changing goals and objectives, for placing weights and priorities on objectives, for defining organizational and administrative operating conditions, for providing communication of information, for selectively or unknowingly providing inducements or impediments, and so on.

Some influences may be considered as components that have general power or strength in altering attitudes and behavior at all, several, or any of the career flow units. These influences include—

- Demographic characteristics of the population served
- Identified health needs and adopted health goals
- Demands for health services
- Community and professional health interests
- Public information and education
- Career counseling, aptitude measures, and recruitment

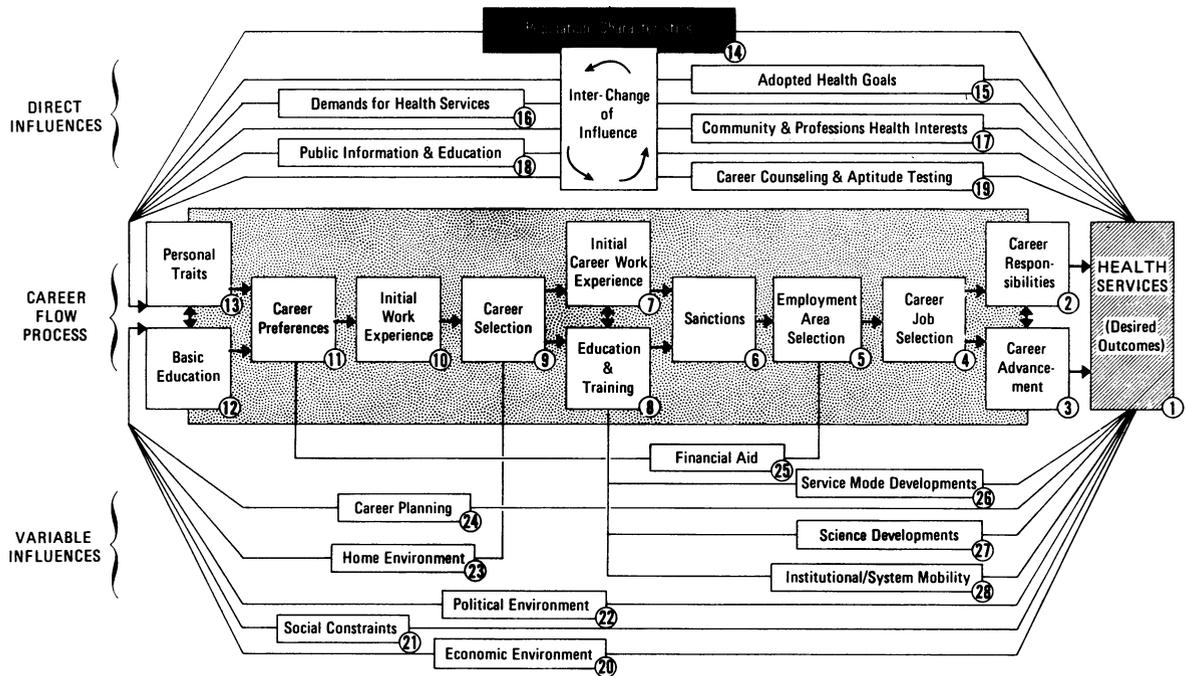
**Variable influences.** Aside from these direct influences, a number of mixed influences contribute significantly to the process of developing health manpower. They are not as closely related to health as the direct influences yet they greatly affect the career-development process of each individual in the system. These influences include—

- Economic environment
- Social constraints
- Political environment
- Home environment
- Career planning
- Financial aid
- Service mode developments
- Scientific developments
- Institutional and system mobility of individuals

### Manpower Distribution Matrix

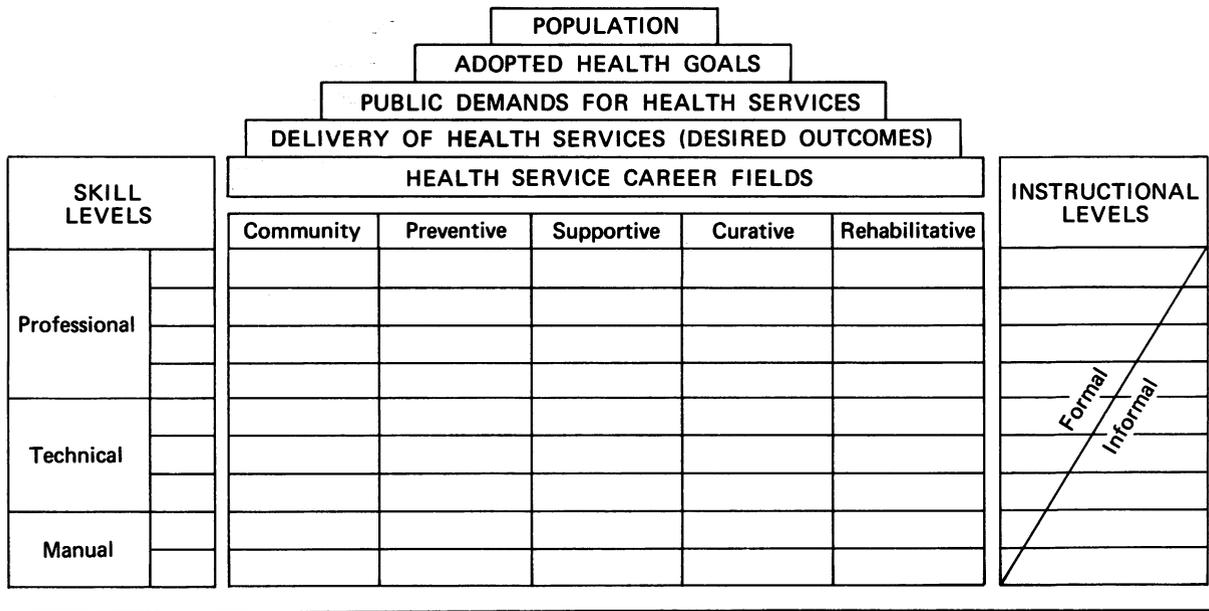
We have attempted to chart in figure 4 the various key factors that interact when some sort of distribution of roles and skills

**Figure 3. HEALTH MANPOWER FLOW DIAGRAM**



Note: Lines Indicate Scope of Influence

**Figure 4. HEALTH MANPOWER DISTRIBUTION MATRIX (Health Services and Planning Activity)**



is established in the deployment of health manpower. The reference for the whole matrix is the target population, with its demographic characteristics, which consists of all those who potentially may demand health services. Information about this population determines what health goals should be adopted.

Public demands for services define ways in which services will be provided as agreed upon by the community and its health establishments. These demands shape the outcome criteria of the health services system, which in turn shape the functions, activities, roles, skills, and so on, of health services manpower that are developed to meet the goals and demands. The major identified fields in which people perform in community health are preventive, supportive, curative, and rehabilitative services.

The professional and paraprofessional manpower mix that is required to meet outcome expectations from the services systems

can be explained by defining the cells in this matrix. The matrix emphasizes that within each field or service area performance is determined by levels of skill, complexity of training, and the physical and mental dexterity required to perform the job.

We also outline the relative levels of instruction for these performances, indicating collegiate and practical training paths (formal and informal learning processes). As changes occur in outcome requirements, definitions for health manpower utilization within the matrix should be rationally altered.

### Conclusion

We have attempted to set forth a comprehensive perspective for health manpower planning which holds that such planning must be (a) population based, (b) outcome oriented, (c) integrated as an essential element in health services planning that is inextricably joined with other major planning functions such as orga-

nization, sociopolitical legislation, science, technology, and economic and financial planning, and (d) must identify and be responsive to a host of direct and variable influences that shape the career development process and define some orderly distribution of all health manpower into a deployment matrix.

Our intent is to present a logical order for health manpower planning studies and not to present any formulas or prescriptions for manpower management.

### REFERENCES

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